Music Knowledge Graph with Recommender Demo

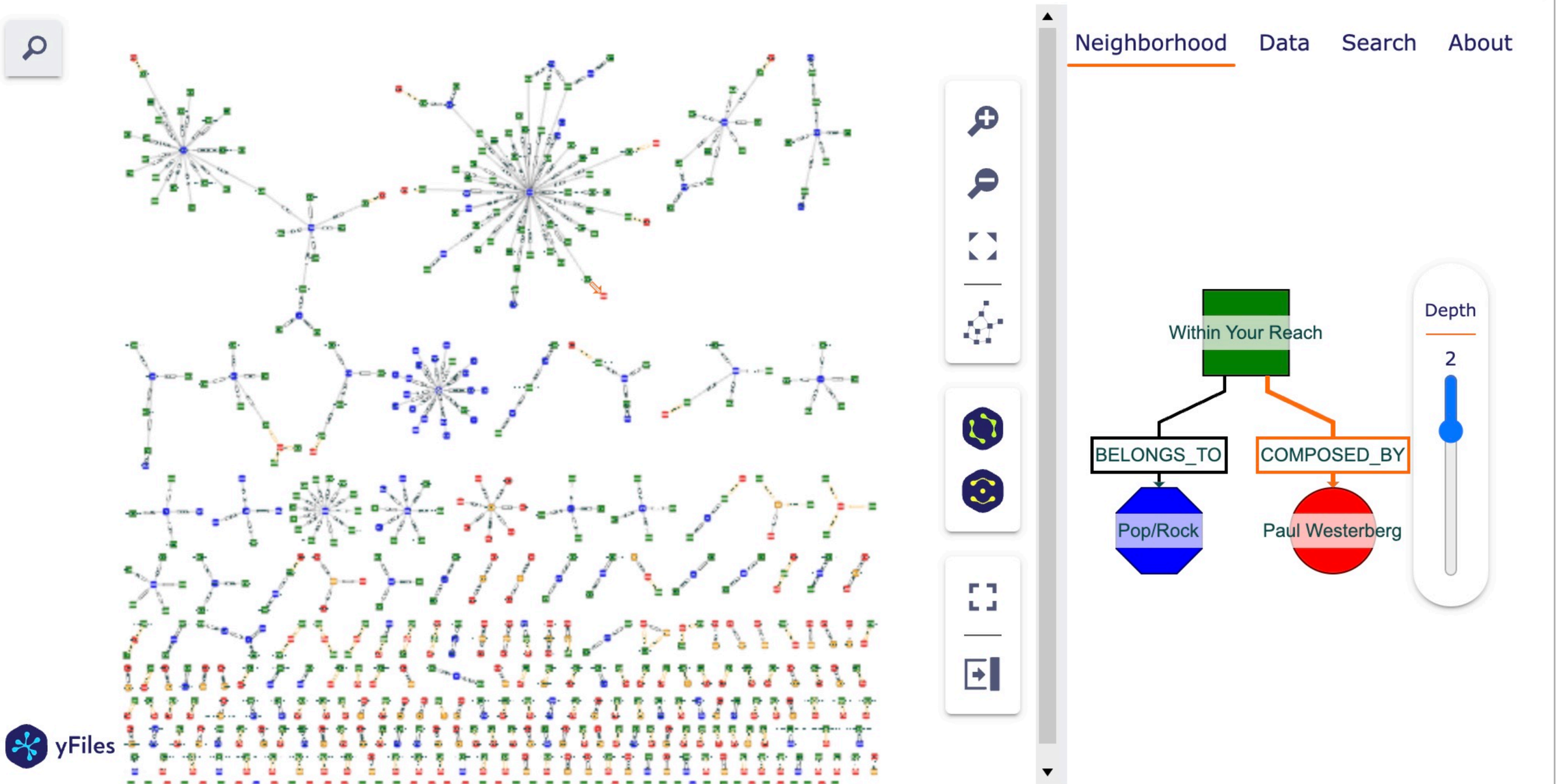
Import & Init

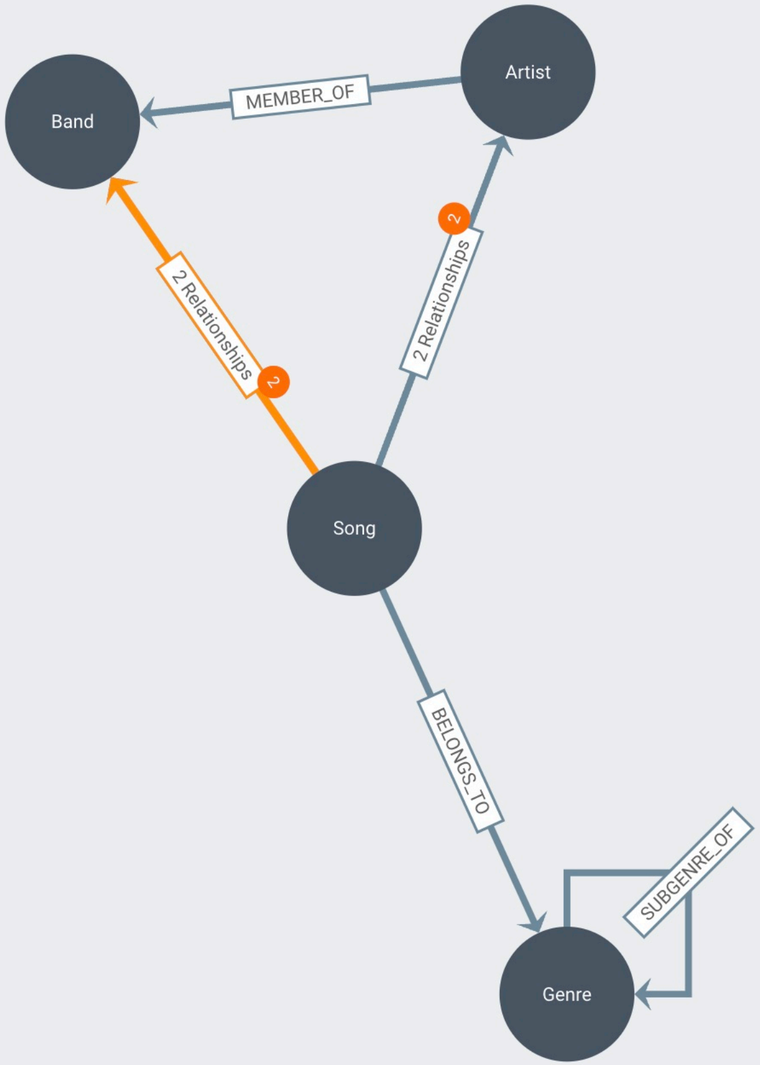
In [1]:
```
from neo4j import GraphDatabase
from yfiles_jupyter_graphs import GraphWidget
import ipywidgets as widgets
import pandas as pd
import numpy as np
import sys
import os
sys.path.append(os.path.abspath("/Users/tianyilouisli/Desktop/finalProject"))
from IPython.display import display
from demo_util import Draw_Graph, RECOMMEND

driver = GraphDatabase.driver(uri = 'bolt://localhost:11003', auth=('neo4j', 'DSCI558'))
artist_selector = widgets.Combobox(placeholder='type something',options=sorted([item['a.name'] for item in driver.sessi
band_selector = widgets.Combobox(placeholder='type something',options=sorted([item['b.name'] for item in driver.session
genre_selector = widgets.Combobox(placeholder='type something',options=sorted([item['g.name'] for item in driver.sessio
song_selector = widgets.Combobox(placeholder='type something',options=sorted([item['s.name'] for item in driver.session
```

Exploratory Graph & Ontology

In [2]:
```
Draw_Graph(driver.session().run("""Match triple = (s)-[p]-(o) Return triple LIMIT 1000""").graph())
```





Relationship Details

GO TO START GO TO END

Type

PERFORMED_BY

Properties

label

Relationship Details

GO TO START GO TO END

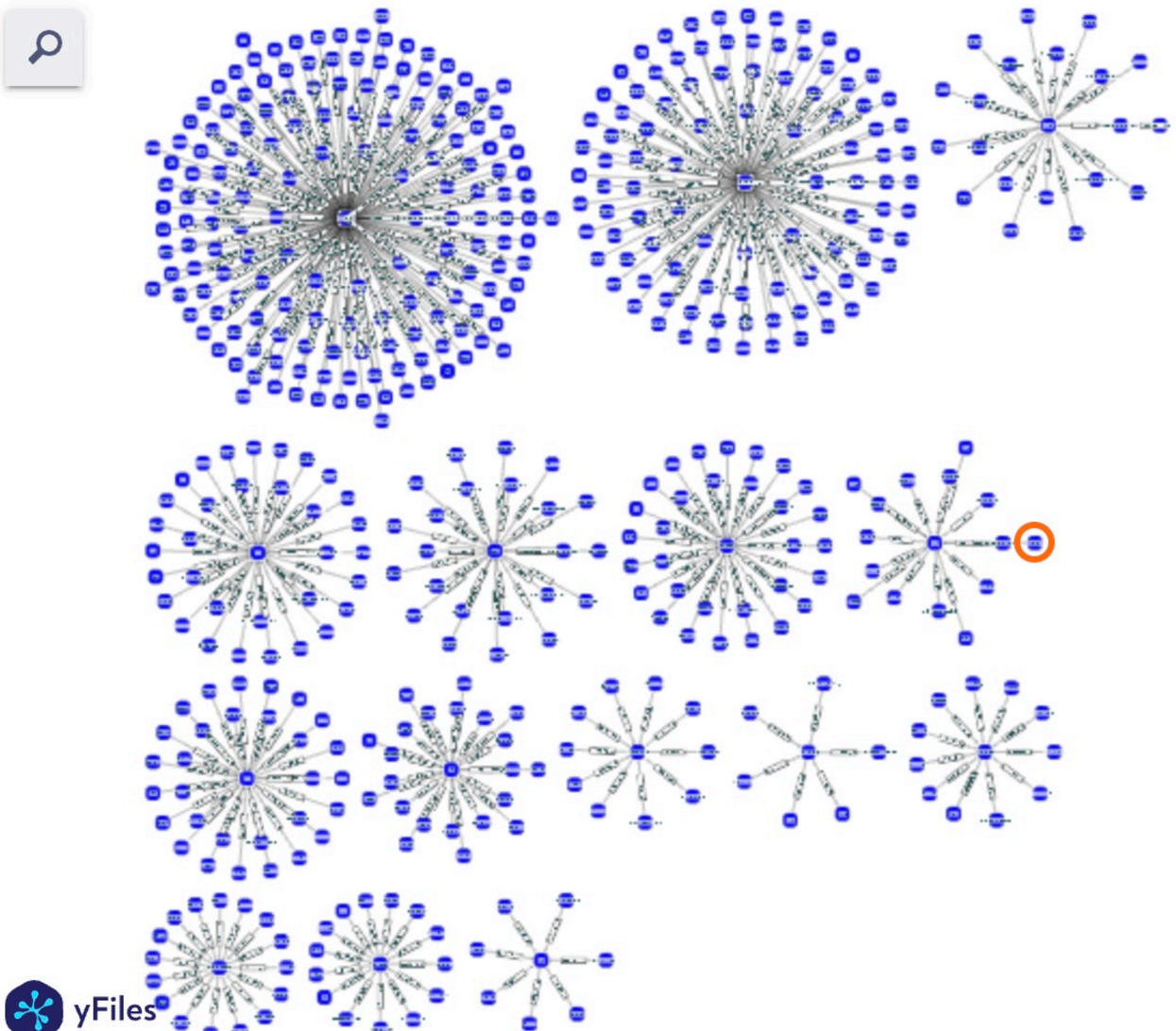
Type

COMPOSED_BY

Properties

Explore Genre Hierarchy

In [3]:
```
Draw_Graph(driver.session().run("""Match triple = ()-[:SUBGENRE_OF]-() Return triple LIMIT 1000""").graph())
```



Neighborhood | Data | Search | About

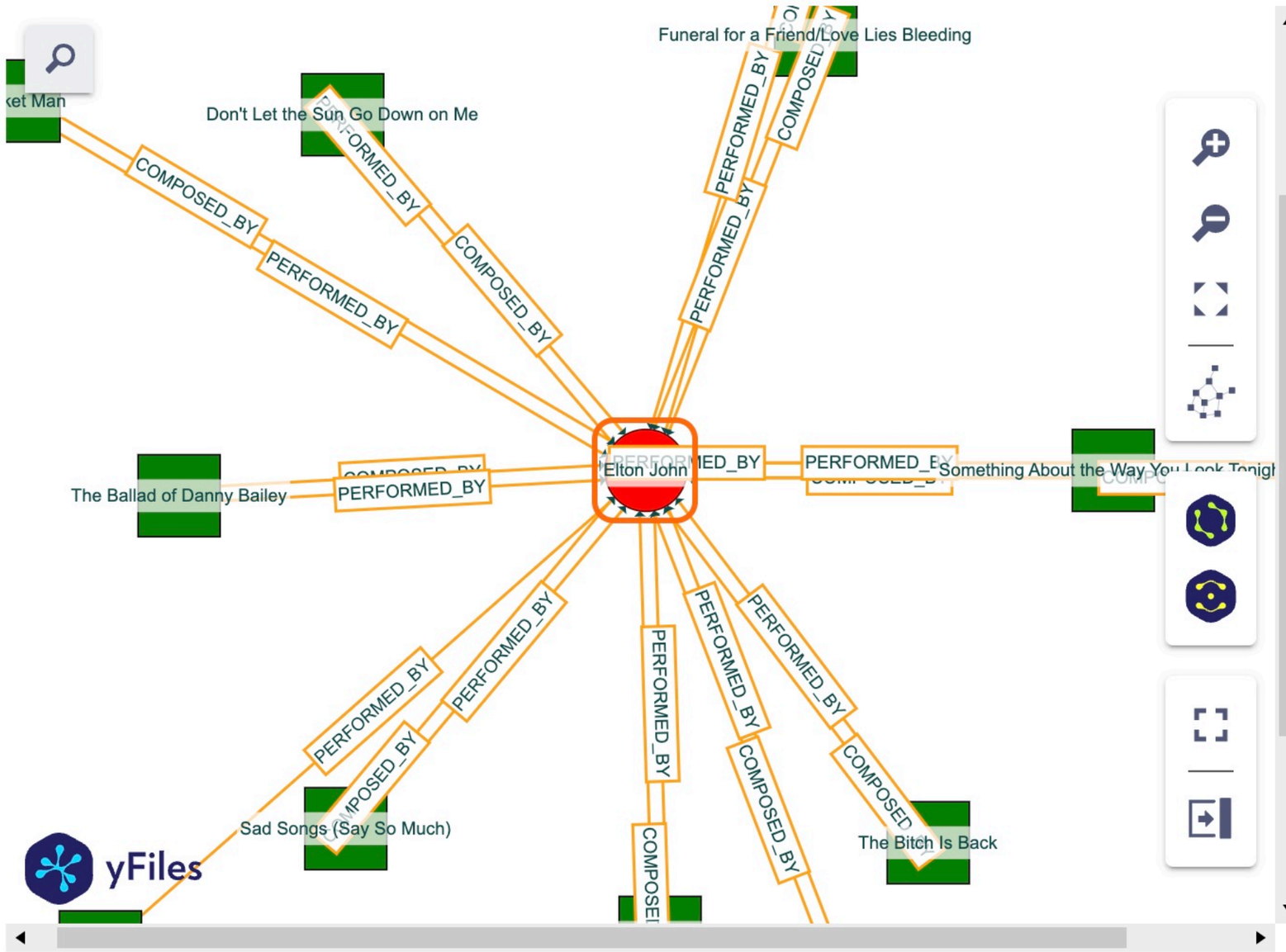
```
                    cappella
                    origins, few
                    doo wop
                    records were
                    made without
                    instrumental
                    backing. Doo
                    wop faded away
                    in the early
                    '60s, though
                    its influence
                    was felt
                    throughout
                    popular music
                    in the
                    following
                    decades.
  name : Doo Wop
  uri : https://www.allmusic.c
        wop-ma0000002556
  label : Genre
▶ __itemState  {2}
```

Query & Graph Relations of Selected Artist

In [4]:
```
display(artist_selector)
```

Artist: Elton John

In [5]:
```
Draw_Graph(driver.session().run("Match triple = (s) - [] - () WHERE s.name =" + '"' + artist_selector.value + '"' + " R
```



Neighborhood | Data | Search | About

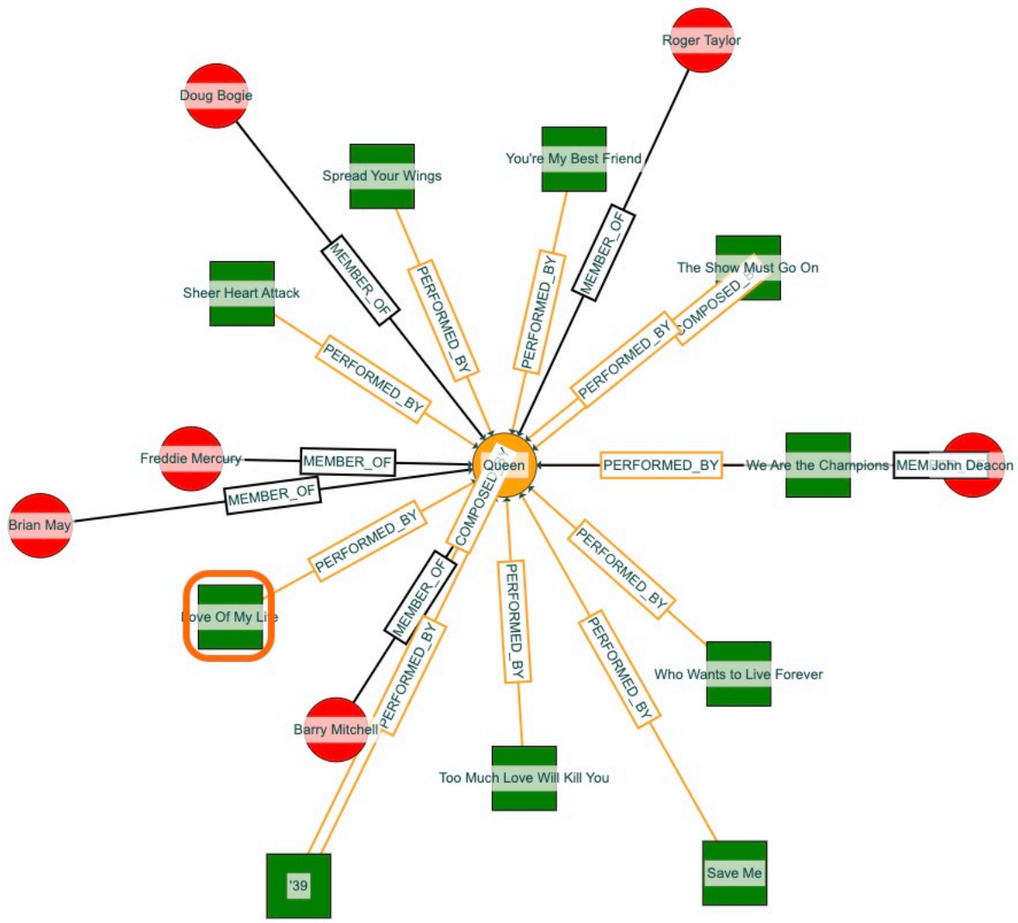
```
aliases : Reginald Kenneth
          Dwight
discription : Soulful
              English singer
              who moved from
              simple,
              sensitive
              piano rock to
              become a
              glamorous
              music
              superstar.
active_years : 1960s - 2020s
name : Elton John
uri : https://www.allmusic.c
      john-mn0000796734
born_in : March 25, 1947,
          Pinner, Middlesex,
          England
label : Artist
▶ __itemState  {2}
```

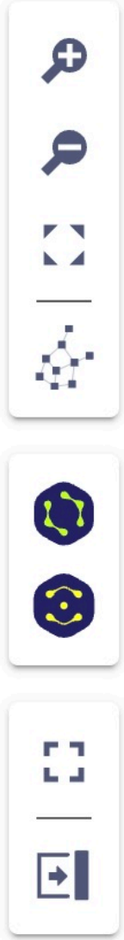
Query & Graph Relations of Selected Band

In [6]:
```
display(band_selector)
```

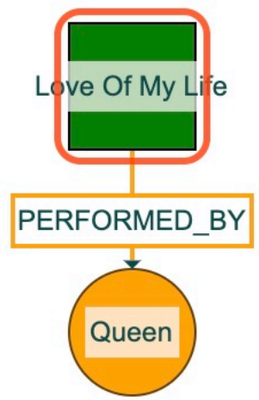
Band: Queen

In [7]:
```
Draw_Graph(driver.session().run("Match triple = (s) - [] - () WHERE s.name =" + '"' + band_selector.value + '"' + " Ret
```





Neighborhood Data Search About



Depth
1

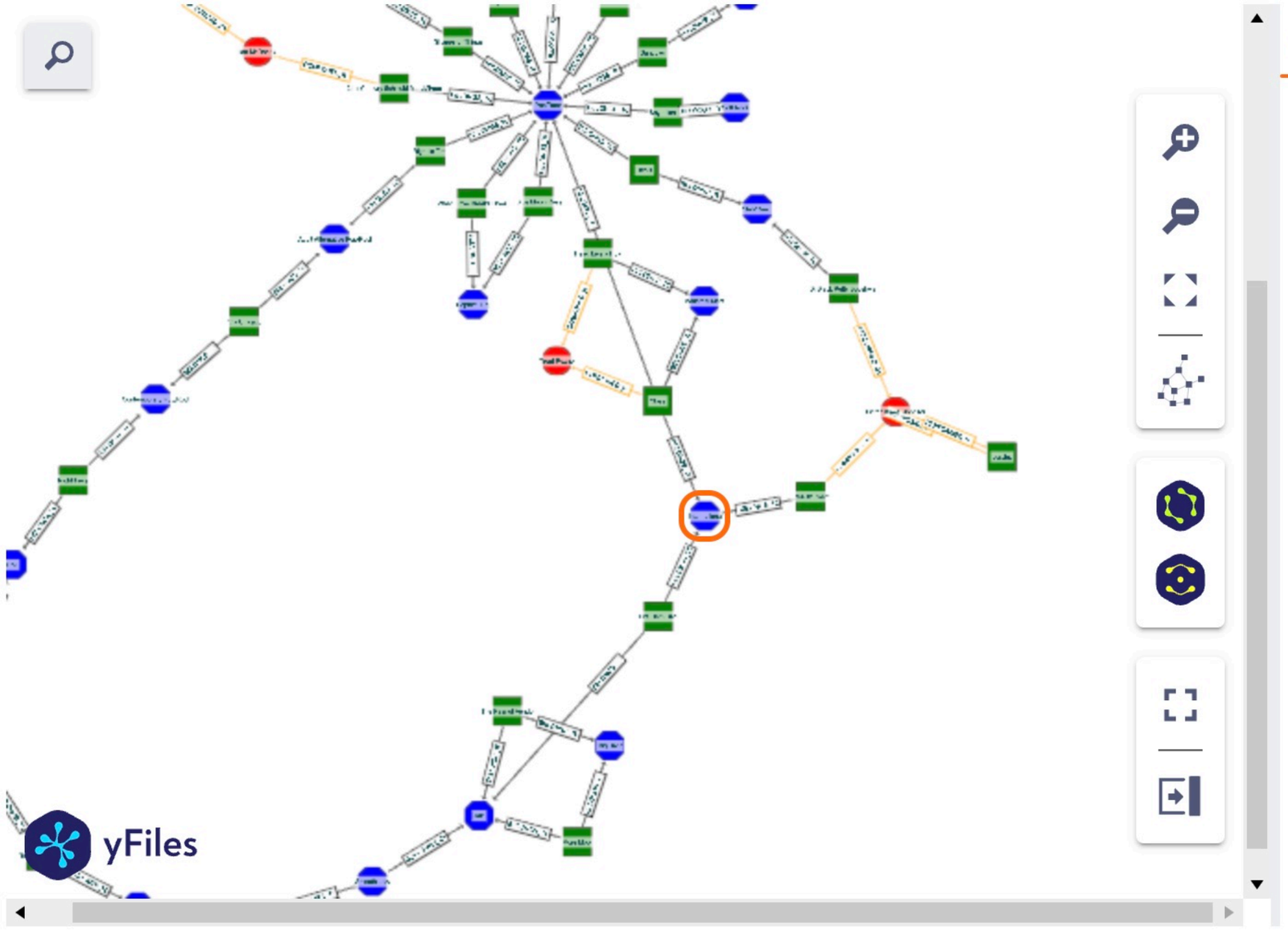
yFiles

Query & Graph Relations of Selected Genre

In [8]:
```
display(genre_selector)
```

Genre: International

In [10]:
```
Draw_Graph(driver.session().run("Match triple = (g:Genre) - [*] - (g2:Genre) WHERE g.name =" + '"' + genre_selector.val
```

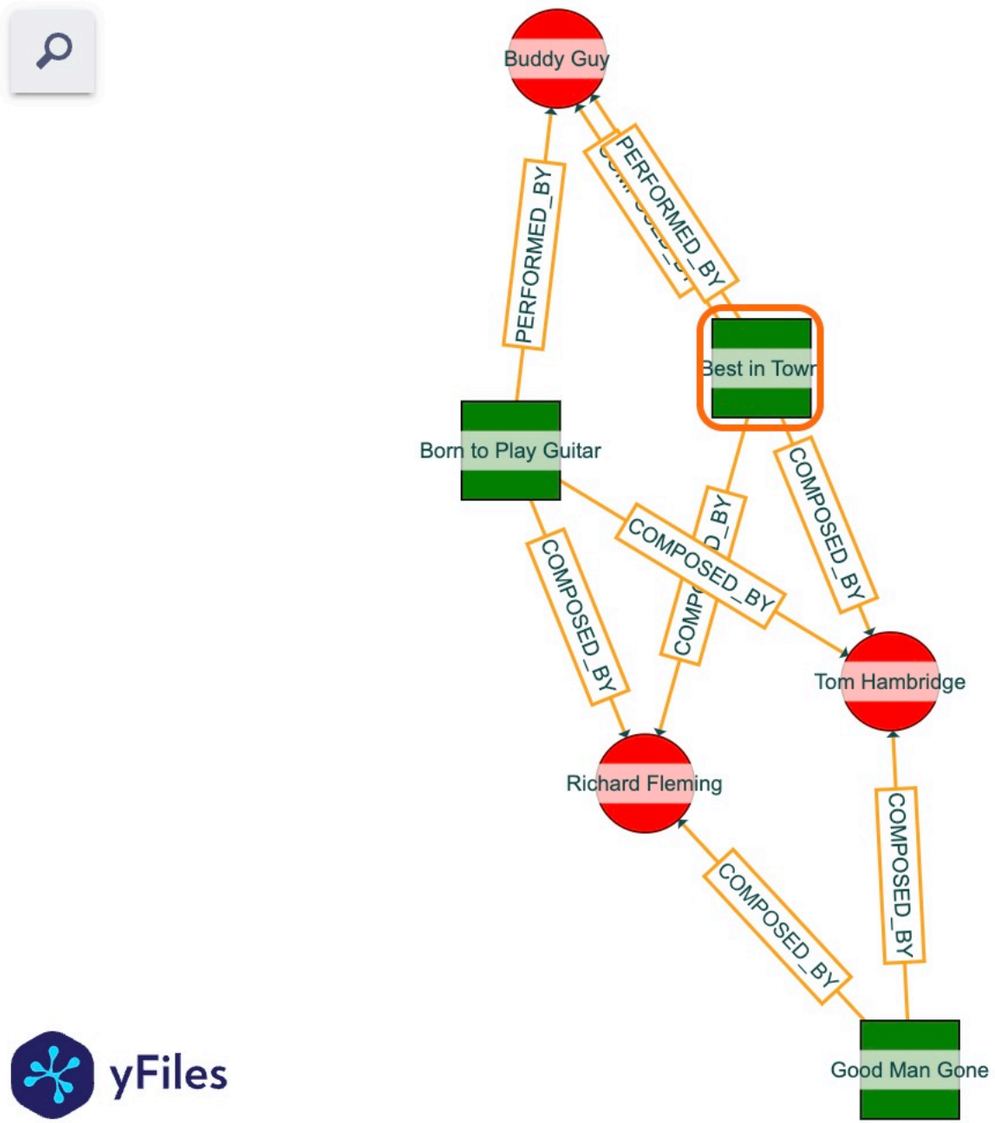


Query & Graph Relations of Selected Song

In [11]:
```
display(song_selector)
```

Song: (Where Do I Begin) Love Story

In [13]:
```
river.session().run("Match triple = (s) - [*] - () WHERE s.name =" + '"' + song_selector.value + '"' + " Return triple
```



Neighborhood | Data | Search | About

```
year : 2013
acousticness : 0.955823248818
loudness : 0.697920672768761
name : Best in Town
valence : 0.6382934872217642
danceability : 0.820210115888
uri : https://www.allmusic.co
      in-town-mt0047522769
energy : 0.4244064479291044
label : Song
▶ __itemState  {2}
```

Recommend Similar Songs

In [14]:
```
display(song_selector)
```

Song: (Where Do I Begin) Love Story

In [15]:
```
recommendation = RECOMMEND(driver, song_selector.value)
```

```
Recommend similar song to '(Where Do I Begin) Love Story':
1 The Hills
2 Prelude to the Afternoon of a Sexually Aroused Gas Mask
3 Survival
4 We've Only Just Begun
5 Too Much Love Will Kill You
```

In [16]:
```
Draw_Graph(driver.session().run("Match triple = (s) - [] - () WHERE s.uri IN " +  str(recommendation) + " Return triple
```